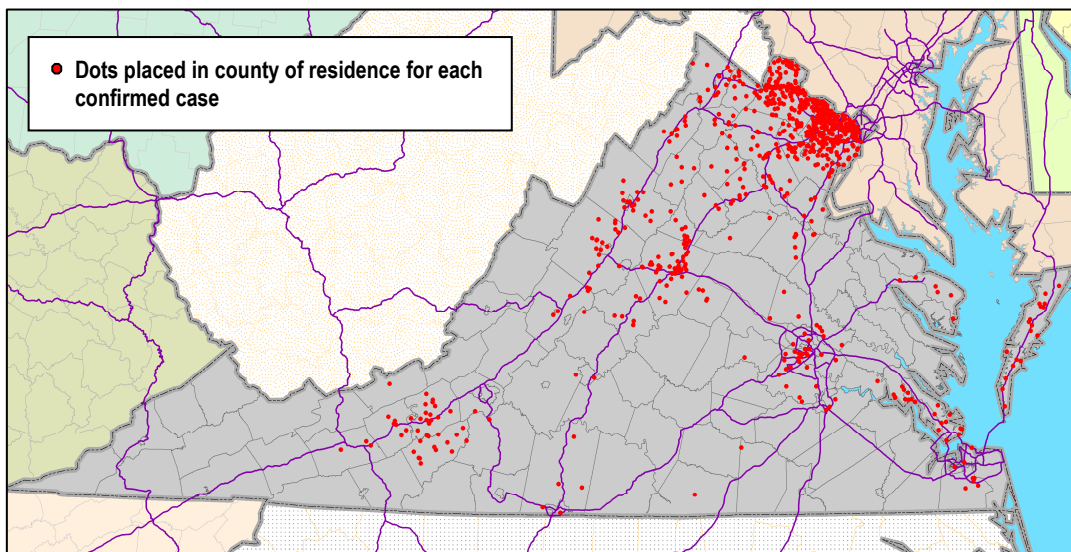


Keeping an Eye on Lyme Disease in Virginia

by David Gaines, Ph.D. - State Public Health Entomologist – Office of Epidemiology
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According to the Virginia Department of Health (VDH), the number of human Lyme disease cases in Virginia has increased substantially over the past several years, increasing from 357 reported cases in 2006 to a record 959 cases in 2007. The statewide Lyme disease count has remained high since that time, with 908 cases being reported in 2009. In the early 1990's, most of the cases of Lyme disease were from the Eastern shore. The early 2000's brought a significant increase of Lyme disease activity to the counties of northern Virginia. Areas of high incidence now also include counties to the south and west of northern Virginia.

Figure 1: Reported Cases of Lyme Disease in Virginia, 2009 (n=908)



Lyme disease is a bacterial infection that can be challenging for clinicians to diagnose because of its broad array of symptoms and numerous laboratory tests. Lyme disease usually presents in one of three different stages, defined by the symptom complex of each stage and the time between tick bite and onset of symptoms. The three stages are as follows: 1) "Early Localized Infection" which presents 3-30 days after the tick bite with a bull's eye rash (i.e., erythema migrans), myalgias, arthralgias, fever, and/or headache, 2) "Early Disseminated Infection" which typically presents 1-4 months following tick bite with aseptic meningitis, neuropathy, facial palsy, and/or heart block, and 3) "Late Disseminated Infection" which typically presents months to years after tick bite with arthritis (especially in the knees), neuropathy, and/or cognitive disorders.

To count cases, VDH uses the US Centers for Disease Control and Prevention (CDC) Lyme disease case definition established in 2008.¹ Using CDC's case definition allows states to compare their rates to other states. In 2009, Virginia ranked 15th in the country for the highest rate of Lyme disease cases meeting the CDC criteria.

In order for these data to remain reliable and accurate, it is of paramount importance that clinicians report cases of Lyme disease they diagnose to their local health department. The information required by the case definition includes the following: 1) clinical data including onset date and associated symptoms, and 2) laboratory evidence of infection. In general, among the cases that cannot be counted by VDH, a large percentage lack sufficient laboratory evidence to meet CDC's case definition.

CDC's requirement for laboratory evidence was increased in the 2008 Lyme disease case definition due to recognition that both the ELISA (EIA) and the Western Blot (WB) IgM test for Lyme disease yield false positive results in some patients. The current requirement is that patients have positive results from more than one type of test (i.e., a "two-tiered" approach) for laboratory evidence of Lyme disease in the early stage of infection. For later stages of infection, a single positive Western Blot (WB) IgG result remains adequate.

For example, in patients who present with symptoms of early localized Lyme disease, the "two-tiered" approach requires that the patient must be EIA positive or equivocal, and WB positive for IgM, in a serum sample drawn ≤ 30 days after onset of symptoms. For the health department to count the case, the patient's onset date must be reported in addition to the two-tier laboratory results. Patients with symptoms of early disseminated or late disseminated Lyme disease must be WB IgG positive to meet CDC's case definition.

It is important to note that the CDC case definition criteria are not necessarily the same as criteria used for clinical diagnosis by healthcare providers. It is hoped that a better understanding of the case reporting criteria may help healthcare providers meet their legal obligation to report cases to local health departments. For more information about the clinical or laboratory diagnostic criteria required by the 2008 Lyme Disease Surveillance Case Definition, go to http://www.cdc.gov/ncphi/disss/ndss/print/lyme_disease_2008.htm. To find contact information for your local health department, go to <http://www.vdh.state.va.us/lhd/>.

¹ Note: the case definition criteria are designed to standardize Lyme case surveillance and reporting across the U.S. and are not necessarily the same as criteria used for clinical diagnosis by physicians.